

Clarification of premature discovery in science in terms of higher education and broader communication

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Abstract

The concept of premature discovery in science entails the publication of an important idea which remains uncited for a long period. Thereafter, a deluge of citations of its substance would occur. An overlooked example concerns the discovery in 1963 of how lung cancer cells stimulate the formation of new lymph vessels in man. Subsequently called “lymphangiogenesis,” the 2000s are witnessing numerous citations which even go so far as to state categorically that it is a new concept. In all probability, higher education and broader communication will together go a long way to ameliorate such long lasting lapses in the literature.

Conception

The concept of premature discovery in Science arose from the observation that an important idea may be published but yet lie fallow for long before there is a flurry of citations on its very substance.¹ In fact, it was likened to an epidemic process wherein germs grow innocuously during a latent period and then blaze forth as a virulent epidemic.^{2,3} It was in this sense that Garfield⁴ recommended authors to expose themselves to literature “of a reasonably high degree of virulence.”

Exemplification

The development in 1963 of my special method for investigating the spread of lung cancer in the human body was what made it relatively easy to trace the footsteps of cancer cells along considerable distances.⁵ Arguably, this method greatly facilitated how to locate, for example, the precise site where cancer cells travelling from, say, the lung to an abdominal lymph node must necessarily land. In fact, there are only two possible lymph-borne landing positions. For one thing, the cells could travel against the existing stream of lymph thereby unavoidably arriving at the node’s *egress* zone, i.e., its *concave* side. For another thing, if these cells could follow a newly formed pathway, then the *ingress* zone situated at its *convex* side would undoubtedly be the end positions. This latter pattern was what I demonstrated with precision microscopically.⁶ Moreover, the opportunities which the discovery could open in terms of advancing knowledge were addressed three times during the usual Discussion. For instance, I asked one suggestive question, namely, “do the various organs and tissues fall naturally into a spectrum according to the ease with which new afferent lymphatic links develop towards them?”

Of course, this question is as far as I know yet to be answered! However, what is on record is that, by 1963, I did publish that lung cancer cells are capable of inducing the formation of new lymph vessels in human beings.

Communication

Within two years, a lone responder so well received my idea that he advocated that surgeons should preferably perform open abdominal look-ins and samplings rather than resort to the usual open chest maneuver.⁷ Thereafter, there was a lull in the literature. And, to the best of my knowledge, the lull persisted until the present decade.

As things stand in the 2000s, the phenomenon of formation of new lymphatics has promotively been named “lymphangiogenesis.” Nowadays, it has been (a) called a “new research frontier,”⁸ (b) reviewed in terms of “recent experimental and clinico-pathological data,”⁹ and (c) pronounced categorically in an Editorial¹⁰ in the high impact *Journal of Pathology* as follows: “The occurrence of lymphangiogenesis in the adult has so far never been reported.” In sum, enthusiastic citations have been pouring in of late. For example, Zwaans and Bielenberg¹¹ included as many as 47 references containing this nomenclature in their thorough review of promising prospects of curing cancer.

Evaluation

Cochran¹² concluded in general that the role of the practicing pathologist is to perceive novel and original methods of pursuing research. Here, it is concluded that the long overlooked 40-year-old discovery⁶ of true formation of new lymph vessels during human

cancer carriage is classifiably novel and original. In other words, it is an example of premature discovery.

Perhaps, if this old discovery had been followed up from the 1960s, the research road still being traversed might have been outdistanced by now. Therefore, an important question arises. Could higher education and broader communication have hastened matters? Certainly, as Garfield⁴ grasped, one sure method of not missing an important idea is for scientific societies to have some panel members who should alert others “to scientific articles appearing in journals they may not regularly read.” Surely, if such practices became universal, the days of instances of premature discovery would be numbered.

Furthermore, as two Professors of Communication, the DeBakeys,¹³ canvassed, it is advisable for aspiring writers to take courses in the field of communication. Likewise, Edward Huth,¹⁴ Editor of *Annals of Internal Medicine*, went to a great length to provide guidelines on authorship. Be that as it may, searching the literature must painstakingly be thorough. In this context, it was my conversance with the experiments carried out by Zeidman¹⁵ in 1959 that made me to verify soon afterwards in human beings his published discovery of new formation of lymph vessels in tumor-bearing rabbits.

In this connection, a fruitful field is now fallow. I refer to the reprint request (RR).¹⁶ With them, I was able to demonstrate¹⁷ that mere discernment of printing errors was enough to point to their source, namely, *Current Contents*. In like manner, I showed by analyzing in this Journal¹⁸ the 1,806 RRs made for the 44 papers written by me between 1970 and 1979 in my favorite fields of pathology, history and epidemiology that “World-wide emulation and organisational improvement of this practice (RRs) would ultimately

enhance scientific productivity.” That paper was written to answer the question: “are reprint requests a tool for documenting data on questions of communication in science?” One of my answers was as follows: “the advanced position of the USA in science is, in part, due to the exceptional degree of information consciousness among its scientists.”

My concern, in conclusion, is whether the current resort to the Internet will be as fruitful as my old experience regarding RRs. So far, I have had the problem of so often getting just the Abstract but not the Text of most of the desired publications. Perhaps, as Garfield¹⁹ gainfully suggested, there is for writers in underdeveloped countries the remedy that “The well-being of science in the Third World is vital to us all. We are one intellectual community.” At least, any important discovery published in such a country will be spotlighted and not consigned to the prematurity class.

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